

Appl. No. 09/931,776
Amdt. dated August 30, 2004
Reply to Office Action of June 29, 2004

REMARKS

In the Office Action dated June 29, 2004, claim 24 was objected to; claims 1-5, 7, 11, 14, 18, and 21-29 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,477,669 (Agarwal) alone; and claims 6, 8, 9, 10, 13, 16, 17, 19, and 20 were rejected under § 103 over Agarwal in view "admitted prior art."

Claims 1, 2, and 25 have been cancelled, without prejudice, to render the rejections of those claims moot.

Claim 24 has been amended to add a period at the end of the claim. Claim 28 has been amended by deleting the word "of" from line 2 to fix a grammatical error. Claim 26 is amended into independent form due to cancellation of claim 25. These amendments do not change the scope of the respective claims.

It is respectfully submitted that claim 3 is not rendered obvious by Agarwal alone. As conceded by the Office Action, Agarwal does not disclose associating an initial error correcting code with a redundancy defined *within a data storage device*. The Office Action correctly noted that the error correction technique described in Agarwal is applied to data transmission. In fact, the error correction technique of Agarwal is applied to wireless communications, in which the quality of the wireless communications link can vary based on atmospheric conditions. Agarwal, 3:59-62; 7:43-50. There is absolutely no suggestion provided anywhere within Agarwal of applying its error correction technique to a data storage device. Clearly, a *prima facie* case of obviousness has not been established with respect to claim 3.

The Office Action merely provided the following conclusory statement to support the obviousness rejection: "As is known in the art, data storage and data communication use similar techniques to ensure the error free communication (read/write) of codewords." 6/29/2004 Office Action at 3. The Office Action did not provide any objective proof that would indicate that a person of ordinary skill in the art would have been motivated to modify the Agarwal system to achieve the claimed invention. To establish a *prima facie* case of obviousness, the Office Action has the burden of establishing how the prior art would have suggested the modification of Agarwal that is

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proposed. See M.P.E.P. § 2143 (8th ed., Rev. 2) at 2100-129. Without the objective proof that would establish the necessary suggestion or motivation to modify the teachings of Agarwal, the obviousness rejection is clearly defective and should be withdrawn.

Claims dependent from claim 3 are allowable for at least the same reasons. Moreover, with respect to dependent claim 5 (which depends from claim 3), Agarwal does not provide any teaching or suggestion of "reorganizing an address space shared by a payload and the redundancy to provide space required by the updated error correcting code within the redundancy." The Office Action cited to no passage in Agarwal to support its allegation of obviousness, nor did the Office Action cite to any other prior art reference. The Office Action merely provided a conclusory statement that the features of claim 5 would be obvious to a person of ordinary skill in the art. Applicant respectfully requests the production of a reference that would suggest a modification of Agarwal to achieve the invention of claim 5. Applicant had previously requested the production of additional evidence to support the Examiner's rejection of claim 5, but apparently, this request has been ignored. Without the requisite evidence to support the proposed modification of Agarwal to achieve the invention of claim 5, the Office Action has failed to establish a *prima facie* case of obviousness against claim 5.

Claim 7, which also depends from claim 3, recites additionally tracking errors made by the data storage device to determine if the initial error condition code is of sufficient strength. In the rejection of claim 7, the Office Action has ignored the language "made by the data storage device" recited in claim 7. Agarwal provides absolutely no teaching or suggestion whatsoever of the additional feature recited in claim 7. Therefore, the *prima facie* case of obviousness against claim 7 is defective on this further ground.

Independent claim 21 was also rejected as being obvious over Agarwal alone. In the rejection of claim 21 over Agarwal, the Office Action did not address at all the language "within [a/the] data storage device" (at lines 3-4 and 7-8 of claim 21) and the language "with the data storage device" of claim 21 (at line 6). 6/29/2004 Office Action at 16-17. Although the Office Action conceded that Agarwal fails to disclose instructions being implemented on a computer-readable medium that when executed perform the recited acts, the Office Action did not address the "data storage device" elements of claim

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21. Applicant respectfully submits that the obviousness rejection is defective for ignoring express elements of the claim.

Clearly, Agarwal fails to teach or suggest any of the following acts:

- associating an initial error correcting code with a redundancy defined *within a data storage device*;
- associating an updated error correcting code with the redundancy in response to a change in an error rate associated *with the data storage device*; and
- moving a divider, defined between the redundancy and a payload *within the data storage device*, to provide space required by redundancy data associated with the updated error correcting code.

There is absolutely no evidence of record that would provide the requisite suggestion to modify the teachings of Agarwal to achieve any of the acts recited in claim 21. The *prima facie* case of obviousness against claim 21 is therefore defective.

Independent claim 22 was also rejected as being obvious over Agarwal alone. In the rejection of claim 22, the Office Action also completely ignored the language "a storage device" recited in line 3 of claim 22. Clearly, Agarwal provides no teaching or suggestion whatsoever of monitoring an error rate of *a storage device*, and dynamically altering a ratio of a redundancy to a payload to provide a level of redundancy appropriate to the monitored error rate. The Office Action had provided no suggestion whatsoever that the technique described in Agarwal can be applied to errors within a storage device. If a reference exists that provides the requisite suggestion to modify Agarwal to achieve the claimed invention, Applicant respectfully requests the production of such a reference. Absent this reference, a *prima facie* case of obviousness has not been established with respect to claim 22.

Independent claim 23 was also rejected as being obvious over Agarwal alone. With respect to claim 23, the Office Action has cited no actual evidence that would provide the requisite suggestion to modify the teachings of Agarwal to achieve the invention of claim 23, which relates to a method of initial error code correction assignment at a manufacturing facility that comprises locating a divider segregating a

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payload and a redundancy portion of a data structure *in a storage device*. A *prima facie* case of obviousness has thus not been established with respect to claim 23.

Claim 24, which depends from claim 23, is allowable for at least the same reasons. Moreover, Agarwal does not provide any teaching or suggestion whatsoever that the initial error code correction is assigned based at least in part on an initial determination of *storage device technology*, a *memory test*, and a determination of use to which the *storage device* will be put. In fact, in the rejection of claim 24, these express elements of claim 24 were completely ignored by the Office Action.

Independent claim 26 is also allowable over Agarwal. Independent claim 26 has been amended from dependent to independent form, with the scope of the claim remaining *unchanged*. Claim 26 recites that determining a need to install a substitute error code correction assignment includes tracking errors, monitoring *media age and use levels*, and performing *self-testing to evaluate memory condition* for the end-use device. This specific language of claim 26 was completely ignored in the rejection of claim 26 on page 3 of the Office Action. Therefore, a *prima facie* case of obviousness has clearly not been established with respect to claim 26.

Independent claim 27 was also rejected as being obvious over Agarwal alone. Claim 27 expressly recites a method that includes determining a *technology type of the storage device*, performing a *memory test* on the storage device and recording a *result of the memory test*, and determining *use to which the storage device* will be put. Also, claim 27 recites selecting an error code correction based on the determination and *memory test*. These elements, expressly recited in claim 27, were not mentioned at all in the rejection of claim 27 on pages 1 and 2 of the Office Action. As Agarwal relates to an error correction technique applied to a wireless communications link, it is clear that Agarwal provides no teaching or suggestion whatsoever of determining a technology type of a storage device, performing a memory test on the storage device, determining a use to which the storage device will be put, and selecting an error correction based on the determinations and memory test. A *prima facie* case of obviousness has thus not been established with respect to claim 27.

Claims dependent from claim 27 are allowable for at least the same reasons. Further, with respect to claim 28, which depends from claim 27, Agarwal clearly does not

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teach "mapping out an address space in the data structure memory locations of inadequate reliability after performing the memory test." In fact, no explanation whatsoever was made with respect to how Agarwal would render obvious the subject matter of claim 28. A *prima facie* case of obviousness has thus not been established with respect to claim 28.

Similarly, with respect to claim 29, which depends from claim 27, no explanation was offered by the Office Action regarding how claim 29 would be rendered obvious by Agarwal. A *prima facie* case of obviousness has also not been established with respect to claim 29.

Independent claim 9 was rejected as being obvious over the asserted combination of Agarwal and "admitted prior art." Although the Office Action cited to teachings of the two references (Agarwal and "admitted prior art"), the Office Action did not explain what would motivate a person of ordinary skill in the art to combine the teachings of Agarwal and the "admitted prior art" to achieve the claimed invention. In the background section of the present application, a discussion is made that a fundamental error rate of data storage media is dependent on a number of factors, including technology type, media age, number of writes/reads, and other factors that can impact the fundamental error rate. This discussion in the background of the present application focuses on the factors that are pertinent to data storage media. On the other hand, Agarwal relates to error detection and correction implemented for a wireless communications link, where error rates depend upon environmental conditions. There was absolutely no need or desirability whatsoever to incorporate the teachings provided in the background of the present application into the Agarwal system, which does not relate to error detection and correction of data storage media. The only apparent rationale for combining the elements disclosed in the background of the present application and the elements of Agarwal is impermissible hindsight based on the disclosure of the present invention. The Office Action has failed to establish why it would be desirable to incorporate the teachings of the background of the present application regarding error rates of storage media into the Agarwal system, which provides error detection and correction of a wireless communications link that is affected by environmental conditions.

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In addition, the background of the present application does not teach *tracking* time and usage of data storage to determine if the ratio results in sufficient redundancy. The background explains that the fundamental error rate is based on a number of factors. However, the background does not even remotely suggest the tracking of time and usage of data storage to determine if a ratio results in sufficient redundancy. Therefore, a *prima facie* case of obviousness has clearly not been established with respect to claim 9, and its dependent claims.

Claims dependent from claim 9 are allowable for at least the same reasons. Moreover, with respect to claim 10, the Office Action pointed to no teaching within either Agarwal or the "admitted prior art" that would even remotely suggest performing a memory test on the data storage device to determine if the ratio results in sufficient redundancy, where the ratio refers to the ratio of the payload to the payload plus redundancy. Also, with respect to claim 11, the Office Action did not even acknowledge the recited language "tracking errors made by the data storage device to determine if the ratio results in sufficient redundancy." See 6/29/2004 Office Action at 7.

Independent claim 13 was rejected as being obvious over the teachings of Agarwal and "admitted prior art."¹ The Office Action cited "admitted prior art" as teaching the technology type determination module to report a technology of a storage device so that an initial error correcting code will be more appropriately selected. Applicant respectfully submits that there was absolutely no motivation or suggestion to combine the teachings of Agarwal and the "admitted prior art." Agarwal relates only to detecting error rates on a wireless communications link, and there was no suggestion of any need or desirability of incorporating the teachings of the "admitted prior art" into the teachings of Agarwal. Also, although the background of the present application states that the fundamental error rate of data storage media is dependent upon the technology

¹ Although paragraph 5.7 on page 9 of the Office Action introduced claim 13 as being rejected under § 103 over Agarwal alone, the explanation text on page 9 of the Office Action actually also refers to "the Specs," which refers to the "admitted prior art." Thus, Applicant is treating the rejection of claim 13 as being over Agarwal and "admitted prior art."

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type of the storage media, there was no discussion whatsoever of a technology type determination module to report a technology of a storage device as recited in claim 13. Thus, even if Agarwal and the "admitted prior art" can be properly combined, the hypothetical combination of Agarwal and the "admitted prior art" does not teach or suggest *all* elements of claim 13. A *prima facie* case of obviousness has thus not been established with respect to claim 13.

Claims dependent from claim 13 are allowable for at least the same reasons. Moreover, with respect to claim 16, there is no teaching in either Agarwal or the "admitted prior art" of a storage device memory test module to perform a memory test on the storage device and to report to the update error correcting code assignment module. No mention is made in Agarwal of performing a memory test. The background of the present application describes various factors that define the fundamental error rate. However, there is no mention in the background of the present application of a storage device *memory test module* to perform a memory test on a storage device and to *report to the update error correcting code assignment module*.

Further, with respect to claim 17, which depends from claim 13, neither Agarwal nor the "admitted prior art" refers to an application determination *module* to determine an application to which a storage device will be put and to *report to the update error correcting code assignment module*.

Similarly, with respect to claim 18, which depends from claim 13, neither Agarwal nor the "admitted prior art" refers to an error tracking, recording and analysis module to report information on errors made by a storage device to the update error correcting code assignment module.

With respect to claim 19, which depends from claim 13, neither Agarwal nor the "admitted prior art" describes an age and use tracking module to report information on an age and use level of a storage device to the update error correcting code assignment module.

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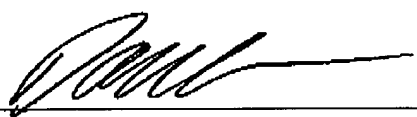
Independent claim 20 was also rejected as being obvious over the asserted combination of Agarwal and the "admitted prior art." As discussed above, no motivation or suggestion existed to combine Agarwal and "admitted prior art." Moreover, neither Agarwal nor the "admitted prior art" refers to the following combination of elements: an initial error correcting code assignment module; a technology type determination module; an application determination module; an update error correcting code assignment module; a storage device memory test module; an error tracking, recording and analysis module; an age and use tracking module; and an application tracking module. Thus, even if Agarwal and the "admitted prior art" can be properly combined, the hypothetical combination of references does not teach or suggest *all* elements of claim 20. A *prima facie* case of obviousness has thus not been established for at least this reason.

In view of the foregoing, all claims are in condition for allowance, which action is respectfully requested. The Commissioner is authorized to charge any additional fees, including extension of time fees, and/or credit any overpayment to Deposit Account No. 08-2025 (10010736-1).

Respectfully submitted,

Date: _____

8-30-04



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